

REMARKS/ARGUMENTS:

Claims 1, 4, 8, 9, 11, 12, and 14 have been amended. Claims 2, 3, 5, 6, 7, 10, and 13 have been cancelled without prejudice. Claims 1, 4, 8, 9, 11, 12, and 14 remain in the application.

Claims 1 through 9 and 12 through 14 were rejected under 35 USC §103(a) as being unpatentable over Takahashi (JP01232156A) in view of Bolasny (3,878,469). Claims 10 and 11 were rejected under 35 USC §103(a) as being unpatentable over Takahashi (JP01232156A) in view of Bolasny (3,878,469) as applied to claims 1 through 9 and 13-14 above and further in view of Child, et al. (4,344,404). The Applicant respectfully traverses these rejections.

Japanese Patent 01232156A discloses an ionization device for internal combustion engine.

U.S. Patent No. 3,878,469 to Bolasny discloses a method and apparatus for producing ions at ultrasonic frequencies.

U.S. Patent No. 4,344,404 to Child, et al., discloses a fuel supply system.

In contradistinction, claim 1, as amended, claims a method for reducing emission and fuel consumption in order to improve combustion in internal combustion engines. The method comprises the steps of preparing a mixture of fuel and air and forwarding the mixture into a combustion chamber of the internal combustion engine. The method also comprises the step of guiding in order to achieve perfect combustion, the mixture through a chamber acting as a treatment area having specific physical properties prior to its entry into the combustion chamber. The method also comprises the step of applying within the treatment area, high voltage via one or more electrodes to the air stream to provide a charge of first polarity to the air stream and applying high voltage via one or more electrodes to the fuel stream to provide a charge of

opposite polarity to the fuel stream. The method also comprises a step of generating an ultrasonic vibration in the air stream by mechanically vibrating the one or more electrodes with a frequency in the ultrasonic range, thereby focussing and compressing the already charged air stream into a central zone of the chamber. This gives way simultaneously to the incoming as yet non-charged air stream, ensuring thereby the creation of ion concentration in higher quantity. The method also comprises the step of generating an ultrasonic vibration in the fuel stream by mechanically vibrating the one or more electrodes with a frequency in the ultrasonic range. This thereby releases the fuel stream already charged from the one or more electrodes towards an outlet of the chamber, and mixes more efficiently by the resonance and transferring electric charge to the as yet uncharged fuel stream and making way to a new fuel stream supplied to the chamber.

It is respectfully submitted that the Examiner has not proven or shown a prima facie case of obviousness under 35 USC §103(a). In particular, it is respectfully submitted that Takahashi '156 alone or in combination with Bolasny '469 and/or Child, et al., '404 does not disclose, teach, suggest or contemplate the present invention of claim 1, as amended. In particular, none of the references cited discloses a method for reducing emission and fuel consumption in order to improve combustion in internal combustion engines that comprises the steps of generating an ultrasonic vibration in an air stream by mechanically vibrating one or more electrodes with a frequency in the ultrasonic range. Furthermore, none of the references describe, disclose, teach or suggest focusing and compressing the already charged air stream into a central zone of a chamber giving way simultaneously to the incoming as yet non-charged air stream, ensuring thereby the creation of ion concentration in higher quantity. Furthermore, none of the references cited disclose, teach, suggest or anticipate the step of generating an ultrasonic vibration in a fuel

stream by mechanically vibrating one or more electrodes with a frequency in the ultrasonic range. Furthermore, none of the references disclose, suggest, teach or contemplate releasing the fuel stream already charged from the one or more electrodes towards an outlet of the chamber, and mixing more efficiently by the resonance and transferring electric charge to the as yet uncharged fuel stream and making way to a new fuel stream supplied to the chamber. Nowhere in any of the references cited are all of the elements claimed in amended claim 1 disclosed or taught. All of the references are completely silent as to generating an ultrasonic vibration in either a fuel stream or an air stream by mechanically vibrating one or more electrodes with a frequency in the ultrasonic range. A person of ordinary skill in the art would not be able to take what is taught in the references and combine it with all of their own knowledge and be capable of producing Applicant's methodology as claimed in amended claim 1. It is respectfully submitted that the Examiner cannot interpret knowledge into either reference when there is no such teaching, suggestion or contemplation in any of the references for such knowledge. Therefore, none of the references disclose, contemplate, suggest or teach the limitations as described above in amended claim 1 and any combination of any of the references with one another could not and would not yield Applicant's claimed methodology as claimed in amended claim 1. Therefore, because there is absolutely no teaching in any of the references for the methodologies as claimed by Applicant in amended claim 1, it is respectfully submitted that there is no conceivable combination of Takahashi reference with the Bolasny reference or the Child, et al., reference or any other known reference that could derive the Applicant's invention as claimed in amended claim 1. Any such derivation from such references can only be made in hindsight after first reviewing Applicant's invention and incorporating Applicant's exclusive and novel ideas therewith, which is clearly not proper under the law. The novel ideas of the Applicant cannot be

inferred or inserted into the cited references unless there is a specific teaching or suggestion for such within the prior art. Therefore, the Takahashi '156 reference does not render Applicant's claim 1, as amended, obvious and as such this rejection is not proper and must fail. Therefore, it is respectfully submitted that claim 1, as amended, and the claims dependent therefrom, overcome the rejection under 35 USC §103(a) and are allowable over this rejection.

In contradistinction, claim 9, as amended, claims equipment reducing emission and fuel consumption in order to enhance combustion in the internal combustion engine. The equipment comprises a first ionizing unit providing the air stream with a charge of first polarity. The first ionizing unit comprises an ionizing chamber inserted in the path of the air stream transported to a combustion chamber of the internal combustion engine and one or more high-voltage electrodes providing the air stream with a charge of first polarity. The equipment also comprises a second ionizing unit providing the fuel stream with a charge of opposite polarity, wherein the second ionizing unit comprises an ionizing chamber inserted in the path of the fuel stream transported to a combustion chamber of the internal combustion engine and one or more high-voltage electrodes providing the fuel stream with the charge of opposite polarity. The equipment also comprises a first vibrating means attached to the ionizing chamber of the first ionizing unit. This means will mechanically vibrate one or more of the electrodes within the chamber with a frequency in the ultrasonic range, thereby focusing and compressing the already charged air stream into a central zone of the chamber giving way, simultaneously, to the incoming, as yet non-charged, air stream, ensuring thereby the creation of ion concentration in higher quantity. The equipment also comprises a second vibrating means being attached to the ionizing chamber of the second ionizing unit. The second ionizing means will mechanically vibrate one or more electrodes within the chamber with a frequency in the ultrasonic range, thereby releasing the fuel

stream already charged from one or more electrodes towards an outlet of the chamber, and mixing more efficiently by the resonance and transferring electric charge to the as yet uncharged fuel stream and making way to a new fuel stream supplied to the chamber.

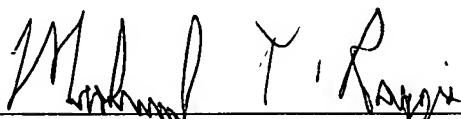
It is respectfully submitted that the Examiner has not proven or shown a prima facie case of obviousness under 35 USC §103(a). In particular, Takahashi '156 alone or in combination with Bolasny '469 or Child, et al., '404 does not disclose, teach, suggest, contemplate or predict the present invention of claim 9, as amended. In particular, none of the references discloses equipment for reducing emission and fuel consumption or to enhance combustion in an internal combustion engine using a first vibrating means being attached to an ionizing chamber of a first ionizing unit, wherein the first vibrating means mechanically vibrates one or more electrodes within the chamber with a frequency in the ultrasonic range, thereby focusing and compressing the already charged air stream into a central zone of a chamber. Furthermore, none of the reference disclose, teach or suggest focussing and compressing the air stream giving way, simultaneously, to the incoming, as yet non-charged, air stream, ensuring thereby the creation of ion concentration in higher quantity. Furthermore, none of the references disclose a second vibrating means being attached to the ionizing chamber of a second ionizing unit, wherein the second vibrating means mechanically vibrates one or more electrodes within the chamber with a frequency in the ultrasonic range. Furthermore, none of the references describe, disclose or teach that the mechanical vibrating will release the fuel stream already charged with one or more electrodes towards an outlet of the chamber and mixing more efficiently by the resonance and transferring electric charge to the as yet uncharged fuel stream and making way to a new fuel stream supplied to the chamber. Nowhere in any of the references is it disclosed, taught, suggested or predicted to have the first and second vibrating means arranged as claimed in

amended claim 9. In fact all of the references cited are completely silent as to these limitations and as such, cannot be used in any combination to form or derive Applicant's claimed invention as claimed in amended claim 9. As such, because there is no teaching, suggestion or contemplation in any of the references of Applicant's invention as claimed in amended claim 9, it is clear that Applicant's idea as claimed is clearly novel and not obvious to one skilled in the prior art. There is no conceivable combination of the Takahashi reference with the Bolasny reference or the Child, et al., reference that could result in Applicant's claimed invention in amended claim 9 without Applicant's own application and novel ideas cited therein being used in hindsight with the prior art cited by the Examiner to create such an invention that would even closely resemble Applicant's claimed invention. Hence, the novel ideas of the Applicant cannot be inferred or inserted into the cited references unless there is a specific teaching or suggestion for such within the prior art. Therefore, the Takahashi '156 reference in combination with the Bolasny or Child, et al., reference does not render Applicant's claim 9, as amended, obvious and as such this rejection is not proper and must fail. Therefore, it is respectfully submitted that claim 9, as amended, and the claims dependent therefrom, overcome the rejection under 35 USC §103(a) and are allowable over this rejection.

If the Applicant may be of any further assistance or provide any other information in the prosecution of this application, the Examiner is requested to contact the undersigned at (248) 364-2100.

Respectfully submitted,

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